



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

## No. XXII.—ILLUSTRATION OF THE CONSERVATION OF ENERGY.

BY JOHN TROWBRIDGE.

Presented Dec. 10, 1879.

IN the Proceedings of the American Academy, Dec. 11, 1878, can be found a preliminary paper by Mr. W. N. Hill and myself upon the heat developed by the rapid magnetization and demagnetization of iron. The research is still in progress, and we hope to determine how much of the work employed in driving dynamo-electric machines is consumed in heating the iron cores of the generator of electrical currents, and whether this loss of work should turn our attention to forms of generators in which this loss is obviated. It may well be that this loss is not sufficient to counterbalance decided advantages in the present form of such machines.

From my work in this research, I draw the following illustration of the conservation of energy.

Let an induction coil be set in action. In the circuit of the secondary coil place another coil of fine wire. Adjust the terminals of the induction coil so that the spark just passes: then place a core of iron or a bundle of iron wire in the coil which has been included in the secondary circuit. The spark instantly ceases to jump. A portion of the energy of the current in the secondary circuit has been consumed in magnetizing and demagnetizing the iron introduced into the additional coil. The work done in this way is capable of being measured.

It is also evident, that, when a number of telephones are in the same circuit, a part of the energy of the human voice is consumed at each telephone in heating the magnetic cores.